

### Remarks

Claims 10, 16 and 24, have been amended with the details set forth in Attachment I (Version with Markings to Show Changes Made).

### The 35 USC 112 Rejection

Claims 24-28 are rejected under 35 USC 112, second paragraph, as being indefinite. In view of the amendments to these claims, the rejection should be withdrawn.

### The 35 USC 102 Rejection

Claims 10, 12-18, and 21-28 are rejected under 35 USC 102(b) as anticipated by van Gerwen et al. In this reference, the electrodes are located across the channel from each other and not located on the same said and in spaced relation along a length of said channel as set forth in Claims 10, 16, and 24, as now amended. In addition, this reference fails to teach the features of Claims 12-14, 17, 18, and 21-28 since both electrodes of the references are not located on the same surface of the channel as clearly seen in 6a – 6b and 7a – 7b. Where are the features of Claims 22, 23, 25 and 28 taught? <sup>103</sup> *bottom surface* Thus, this reference fails to teach each feature set forth in Claims 10, 12-18, and 21-28, particularly as now amended, and thus fails to support a rejection of these claims under 35 USC 102. The rejection should be withdrawn.

### The 35 USC 103 Rejections

Claims 10, 12-13, 16 and 20-26 are rejected under 35 USC 103(a) as unpatentable over Clark et al in view of Kipling et al. As now amended, Claims 10, 16, and 24 set forth that the electrodes are located on a same surface and spaced along a length of the fluidic channels, which feature is not taught by either references. Where are the features of Claims 22, 23 and 25 taught? <sup>103</sup> Thus, this rejection should be withdrawn.

Claims 11, 14, 17-19 and 27-28 are rejected under 35 USC 103(a) as unpatentable over Clark et al in view of Kipling et al and further in view of Taylor et al. These claims depend from either Claim 10 or Claim 16 or Claim 24. As pointed out above, neither the primary or secondary references teach or suggest the feature now added to parent Claims 10, 16, and 24. The reference Taylor et al also fails to teach or suggest this added feature. Accordingly, this rejection should be withdrawn.

Claim 15 is rejected under 35 USC 103(a) as being unpatentable over Clark et al in view of Kipling et al, and further in view of Stetter et al. As pointed out above, neither Clark et al or Kipling et al teach the electrode arrangement now set forth in parent Claim 10. Stetter et al was applied to teach the use of an AC power source, and the addition of such a source to Clark et al would not teach or suggest the features of Claim 15 which includes the features of parent Claim 10. Thus, this rejection should be withdrawn.

Claims 11 and 19 are rejected under 35 USC 103(a) as unpatentable over van Gerwen et al in view of Taylor et al. These claims depend from Claims 10 and 16 and as pointed out above, the primary reference fails to teach the feature added to the parent claims. Taylor et al also fails to teach this added feature. Thus, this rejection should be withdrawn.

Conclusion

In view of the amendments to the claims and the foregoing comments, each rejection is believed overcome, and Claims 10-28 are deemed to be allowable. Thus, this application is in condition for allowance based on Claims 10-28.

Respectfully submitted,

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Enclosure:  
Attachment I



Attachment I  
S.N. 09/737,542  
Version with Markings to Show Changes Made

In The Claims:

Claims 10, 16, and 24, amend to read as follows:

10. (Twice Amended) An apparatus including means for [the] determining trapping of pathogen by antibodies deposited in a fluidic channel, comprising:

a fluidic channel having at least one pair of spaced electrodes localized along a length of said fluidic channel, with the electrodes of said at least one pair being located on the same side of said fluidic channel,

antibodies located on said spaced electrodes,

means for producing an electric field across said spaced electrodes, and

an impedance sensor for measuring impedance between said spaced electrodes.

16. (Twice Amended) A sensor using impedance measurements to detect the presence of pathogens attached to antibodies, comprising:

a microfluidic device having at least one microchannel therein,

at least one pair of spaced electrodes located on a surface along a length of said microchannel,

said pair of spaced electrodes being located on the same surface of the microchannel,

antibodies located on said spaced electrodes,

an AC or DC power supply for producing an electric field across said spaced electrodes, and

means for measuring impedance between said spaced electrodes.

24. (Amended) In an apparatus having means for determining [the] trapping of pathogen by antibodies deposited in a fluidic channel, the improvement comprising:

- at least one pair of spaced electrodes located on a same surface and along a length of said fluidic channel,
- antibodies located on said spaced electrodes,
- means for producing an electric field across said spaced electrodes, and
- an impedance sensor for measuring impedance between said spaced electrodes.



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PATENT

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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Serial No. :	09/737,542	Art Unit :	1641
Filed :	December 14, 2000	Examiner	K. Padmanabhan
For :	Impedance Measurements for Detecting Pathogens Attached to Antibodies		

Commissioner for Patents  
Washington, D.C. 20231

EXPRESS MAIL CERTIFICATE

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Date of Deposit 8-27-02

I hereby certify that the following *attached*

1. Amendment Under 37 CFR 1.116 (6 pages)  
Attachment I – Version with Markings to Show Changes Made (2 pages)
2. Return postcard

is being deposited with the United States Postal Service "Express Mail Post Office to addressee" service under 37 CFR 1.10 on the date indicated above and is addressed to Box: AF, Commissioner for Patents, Washington D.C. 20231.

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